
**PHYSICS 30S AND PHYSICS 40S
LEARNING RESOURCES:
ANNOTATED BIBLIOGRAPHY**

*A Reference for Selecting Learning Resources
(2003)*

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identified where this has not been done, please notify Manitoba Education and Youth. Errors or omissions will
be corrected in a future edition.

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INTRODUCTION

Reference for Selecting Learning Resources

Physics 30S and 40S Learning Resources: An Annotated Bibliography: A Reference for Selecting Learning Resources (2003) is a reference tool provided by Manitoba Education and Youth to help educators select student and teacher learning resources that support Physics 30S/40S curriculum. This bibliography is intended to be used as a reference for selecting learning resources along with the *Manitoba Text Book Bureau Catalogue of Learning Resources*, which lists ordering information and prices. The learning resources can be purchased by visiting the online version of the Manitoba Text Book Bureau (MTBB) catalogue at <http://www.mtbb.mb.ca>.

Most of the learning resources are also available to Manitoba educators from the Instructional Resources Unit (IRU) Library, whose online catalogue is available at <http://libcat.merlin.mb.ca>.

Learning Resources Reviews

The learning resources listed in *Physics 30S and 40S Learning Resources: An Annotated Bibliography: A Reference for Selecting Learning Resources (2003)* were reviewed for the purpose of identifying materials that support Manitoba's physics curriculum. Publishers submitted physics learning resources in response to Manitoba Education and Youth's Call for Physics Learning Resources. Educators from across Manitoba participated in the reviews. All review participants were selected by Manitoba Education and Youth from superintendent nominations. In February and May 2003, teams of teacher-evaluators from Manitoba schools examined the learning resources submitted and, using a collaborative review process, made recommendations regarding the suitability of the resources for Manitoba students and teachers.

Resource Selection Criteria

The selection of learning resources was based on the fidelity with the rationale, philosophy, processes, and learning outcomes identified in *Senior 3 Physics (30S): A Foundation for Implementation (2003)* and the draft version of *Senior 4 Physics (40S): A Foundation for Implementation* (final publication scheduled for release in 2004).

The learning resources in this annotated bibliography were selected according to the following criteria:

- **Curriculum Fit/Content/Philosophy:** Evaluators determined the suitability of each learning resource by considering the degree to which the content and processes of the resource align with, and support the learning outcomes and philosophy of, the new physics curriculum. Evaluators also determined the degree to which the resource provides for multiple approaches to learning, has a wide range of use, is current, and includes a variety of media formats.
- **Instructional Design:** Evaluators determined the appropriateness of the resource in terms of its instructional design, the degree to which it states instructional goals and learning outcomes, and whether it addresses a variety of learning and teaching styles.

-
- **Social Considerations:** Evaluators determined the appropriateness of the resource in terms of social concerns. Where appropriate, they considered the degree to which the resource is free of bias and stereotyping, includes Canadian content, utilizes culturally diverse examples, and accurately portrays First Nations, Inuit, and Métis peoples.
 - **Technical Design:** Evaluators determined the appropriateness of the resource in terms of its technical design, considering the degree to which the resource is visually interesting, appealing, and has a logical and consistent form.

Information on a specific learning resource may be obtained from the descriptive information in the annotated bibliography, as well as from the supplier, published reviews, colleagues, and an examination of the resource.

Terms and Definitions

The following terms and definitions are used in all annotated bibliographies to describe the learning resources:

- **Breadth:** identifies student learning resources that address a wide range of topics (with the highest possible level of fidelity with the curriculum framework) for a particular grade.
- **Depth:** identifies student learning resources (with the highest possible level of fidelity with the curriculum framework) that provide especially effective learning experiences for students for a particular grouping of student learning outcomes.
- **Breadth and Depth:** identifies comprehensive learning resources that provide both breadth and depth dimensions for a particular grouping of student learning outcomes.
- **Teacher Professional Reference:** identifies resources that provide theory, research, and classroom strategies to assist teachers in implementing the learning outcomes identified for a specific subject area.
- **Teacher Reference Handbook:** identifies resources that assist teachers in implementing the learning outcomes identified for a given subject area.
- **Teacher Support Material:** identifies resources that support teachers in implementing the accompanying student learning resources. Support materials include
 - guidelines in using specific material, providing instructional and assessment support and suggestions for adaptation
 - strategies that address many of the General and Specific Learning Outcomes
 - suggestions for cross-curricular connections
 - extensive instructional support, including assessment

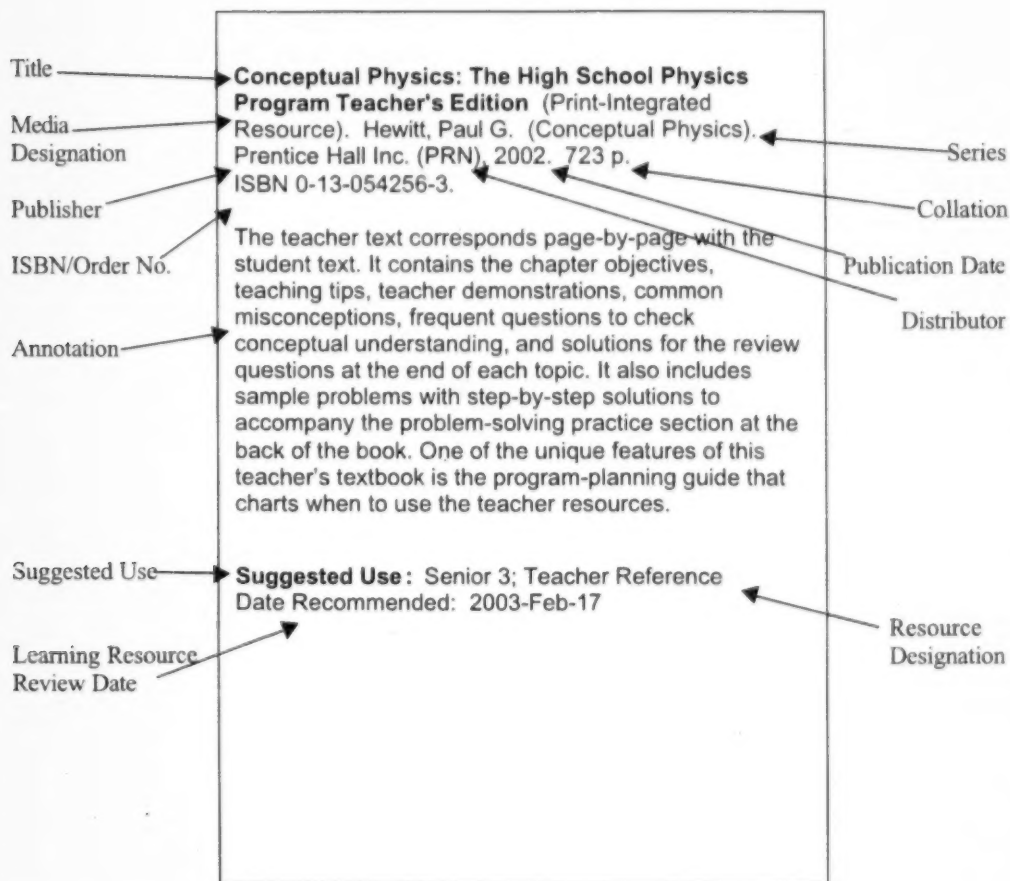
Organization

The **learning resources** appear by title in alphabetical order. Integrated resources and series have an overall annotation (describing the components, organization, and general cautions, if applicable), followed by descriptions of the individual components.

Indexes by grade, resource designation, and media type follow the alphabetic title listings.

The **Distributor Directory** at the end of the bibliography provides an alphabetical listing of distributors, including their addresses.

Resource Description: Sample Page



Note: Definitions of resource descriptions appear on the following page.

Resource Description: Definitions

The following information is provided for each learning and teaching resource (as applicable):

- **Annotation:** provides an overall description of the resource. Brief annotations of individual components and/or groups of components of the integrated resources and series are also provided.
- **Author(s):** refers to the author(s), editor(s), or director(s) of the resource. When a resource has more than three authors/editors only the first name is cited, followed by "et al."
- **Cautions:** alert teachers to potentially sensitive curriculum fit issues or possible community concerns relating to the resource.
- **Collation:** specifies the number of pages of the resource.
- **Distributor:** is abbreviated in parentheses following the publisher or producer. The full names, addresses, fax numbers, and telephone numbers of these companies are given in the Distributor Directory.
- **Media Designation:** refers to resource categories, such as print, non-fiction, kit, integrated resource, series, book collection, anthology, software, video, or audio.
- **Suggested Use:** indicates the grade(s) for which the resource is most suitable and identifies the resource designation. *Resource designation* refers to the classifications of student breadth, depth, or breadth and depth, and/or teacher reference, and/or parent support. The resource designation for an integrated resource and series applies to the resource as a whole. Please note, for example, that an integrated resource may be designated as student depth and breadth and as teacher reference. This indicates that the audience for the resource is students, but the resource also includes teacher support materials.
- **System Requirements:** specifies the system requirements needed to operate the software resource successfully. Abbreviations used: MB—megabyte; RAM—random-access memory.
- **Title:** refers to the name of the resource. All titles are listed in alphabetical order. Titles of individual components within the integrated resources and series are also provided.

Titles and Descriptions

Physics 30S and 40S: Annotated Bibliography

Conceptual Physics: The High School Physics Program (Print-Integrated Resource). Hewitt, Paul G. (Conceptual Physics). Prentice Hall Inc. (PRN).

The focus of this resource is on conceptual understanding of physics principles. Although it supports the philosophy of the Manitoba curriculum, it does not directly address certain Specific Learning Outcomes that require extensive mathematical treatment. For instance, problem solving is approached through a "physics-first/math-second" design. It promotes group interaction and communication, active learning, and student creativity, yet also allows for independent work and learning. Concepts are clearly introduced and developed, and allow for a variety of learning styles. Assessment strategies are developmentally appropriate.

The text uses humour to engage students in the conceptual understanding of physics, including cartoons and various other graphics to stimulate learning. The text is well bound, user-friendly, and should maintain the interest of students. There are also computerized test banks on CD-ROM, a teacher's edition of the text, a lab manual, a package of overhead transparencies, challenging "Next-Time questions," a core resources kit, and a lab manual for extra enrichment.

Comment: The resource also includes an interactive website that is directly linked to the units and chapters of the text and contains java applets of physics demonstrations, tutorials, and supplemental resources. The ThinkQuest Materials database on the website includes student-generated materials that may not be authoritative. Teachers should review materials before using them in the classroom.

Note: Because this resource is a U.S. publication, there is no Canadian content and American spelling is used.

Comment: The mathematical component of the Manitoba physics curriculum, especially at the Senior 4 level, is not sufficiently addressed. Teachers will need to use supplemental resources from the Core Resources package (e.g., the *Problem-Solving Exercises in Physics* workbook and the lab manual), as well as from the Manitoba Physics *Foundation for Implementation* documents, in order to meet curricular expectations.

Date Recommended: 2003-Feb-17

Conceptual Physics: The High School Physics Program (Student Book) (Print-Integrated Resource). Hewitt, Paul G. (Conceptual Physics). Prentice Hall Inc. (PRN), 2002. 723 p. ISBN 0-13-054254-7.

This textbook includes a general overview of the study of physics, with units on Mechanics; Properties of Matter; Heat; Sound and Light; Electricity and Magnetism; and Atomic and Nuclear Physics. Appendices include Units of Measurement; Working with Units; Graphing; Vector Applications; Exponential Growth and Doubling Time; and Problem-Solving Practice.

This textbook is written primarily to capture the interest of all students, including those who will not necessarily be choosing physics as a career. The examples include real-life situations, and many of the activities are interesting and engaging. The resource also provides many possibilities for differentiated instruction. The material is often presented in a variety of modes, with an emphasis on graphic over mathematical presentation. The resource provides many opportunities for the student to do hands-on learning, often with no expensive equipment required. Special-feature sections add a valuable dimension to the resource by addressing such interests as links to technology, careers, sports, and our society.

Suggested Use: Senior 3; Student - Breadth and Depth
Date Recommended: 2003-Feb-17

Conceptual Physics: The High School Physics Program Core Resources (Kit) (Print-Integrated Resource). Robinson, Paul. (Conceptual Physics). Prentice Hall Inc. (PRN), 2002.

This in-depth resource package includes laboratory manual, Probeware Lab Manual, Concept-Development Practice Book (student worksheets to develop concepts), Problem Solving exercises, Next-Time Questions that encourage students to apply what they learned, blackline master tests, and a website link providing updated resources.

Suggested Use: Senior 3; Teacher Reference
Date Recommended: 2003-Feb-17

Conceptual Physics: The High School Physics Program Laboratory Manual (Print-Integrated Resource). Robinson, Paul. (Conceptual Physics). Prentice Hall Inc. (PRN), 2002. 322 p. ISBN 0-13-054257-1.

This manual is a collection of 99 labs that can be used to develop learning of many of the curricular outcomes. Clearly written procedures are easy for students to understand and lead to conceptual development.

Suggested Use: Senior 3; Teacher Reference
Date Recommended: 2003-Feb-17

Conceptual Physics: The High School Physics Program Overhead Transparencies with Teaching Guide (Print-Integrated Resource). Hewitt, Paul G. (Conceptual Physics). Prentice Hall Inc. (PRN), 2002. 151 p. ISBN 0-13-054273-3.

This comprehensive transparency package contains 100 clear and colourful transparencies that correspond to sections in the student text. Accompanying each transparency are instructional strategy and questions/answers to challenge the student's understanding.

Suggested Use: Senior 3; Teacher Reference
Date Recommended: 2003-Feb-17

Conceptual Physics: The High School Physics Program Teacher's Edition (Print-Integrated Resource). Hewitt, Paul G. (Conceptual Physics). Prentice Hall Inc. (PRN), 2002. 723 p. ISBN 0-13-054256-3.

The teacher text corresponds page-by-page with the student text. It contains the chapter objectives, teaching tips, teacher demonstrations, common misconceptions, frequent questions to check conceptual understanding, and solutions for the review questions at the end of each topic. It also includes sample problems with step-by-step solutions to accompany the problem-solving practice section at the back of the book. One of the unique features of this teacher's textbook is the program-planning guide that charts when to use the teacher resources.

Suggested Use: Senior 3; Teacher Reference
Date Recommended: 2003-Feb-17

Conceptual Physics: The High School Physics Program Test Bank with TestWorks CD-ROM (Print-Integrated Resource). (Conceptual Physics). Prentice Hall Inc. (PRN), 2002. 367. ISBN 0-13-054272-5.

This newsprint manual is composed of tests that correlate with the student text. The tests include multiple choice, true-or-false questions, essay questions, and problem solving. The CD-ROM gives teachers the opportunity to rearrange the questions to correspond to the Manitoba curriculum.

System Requirements

CD-ROM requires standard Windows/Macintosh computer with 486 MHz or better processor, CD-ROM drive.

Suggested Use: Senior 3; Teacher Reference
Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR).

This series consists of a student textbook, a student study guide, a teacher's edition (both in print and on CD-ROM), a transparency package, a laboratory manual, a computer test bank, and a *Teacher Wraparound Edition* that integrates teacher resources with student materials. The *Teacher Classroom Resources* include chapter assessment guides; study guides; Enrichment, Critical Thinking, and Reteaching worksheets; colour transparencies and worksheets; solutions to problems; and supplementary problems.

The *Physics: Principles and Problems* series covers six of the eight Senior 3/Senior 4 topics. Treatment of some topics will need to be supplemented. In particular, teachers will require supplemental materials to cover the historical context of the Nature of Light topic and the Waves topic in Senior 3 physics.

Comment: This resource is a U.S. publication and has no Canadian contexts or references to Canadian achievements in physics or technology. Also, its implementation of Système International (metric) is inconsistent.

Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems (Student Book) (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR), 2002. 894 p. ISBN 0-07-823896-X.

The *Principles and Problems Student Book* is divided into six sections: Science of Matter and Energy, Mechanics, States of Matter, Waves and Light, Electricity, and Modern Physics. These appendices include a math handbook, extra practice problems, solutions to problems, additional topics, equations, tables, and safety symbols.

Six of the eight units of the Senior 3/Senior 4 Manitoba physics curriculum are covered, although teachers will need to provide supplemental materials to fully cover some topics, particularly the historical context of the Nature of Light topic and Waves topic in Senior 3 Physics.

The text is organized with clear student objectives, sample and practice problems, labs, chapter reviews, and suggestions for inquiry and

design experiences. It identifies connections with other disciplines and real life, and offers suggestions for enrichment.

Comment: This student text presents a traditional linear treatment of content that is not consistent with the spiral structure of the Manitoba physics curriculum.

Suggested Use: Senior 3; Senior 4; Student - Breadth and Depth
Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems Computer Test Bank (Windows and Macintosh) (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR), 2002. ISBN 0-02-825504-6.

The *Physics: Principles and Problems Computer Test Bank* comprises three floppy disks for Windows or Macintosh computers.

It consists of multiple-format questions, including multiple choice, true/false, and short- and long-answer problem solving. It also contains answers and solutions to problems. The questions can be rearranged and modified to make different tests.

System Requirements

Floppy disks require standard Windows/Macintosh computer with 486 MHz or better processor, Windows 95, and 16 MB RAM.

Suggested Use: Senior 3; Senior 4; Teacher Reference
Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems Interactive Teacher Edition (CD-ROM) (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR), 2002. unp. ISBN 0-07-826278-X.

This resource has the following characteristics:

- The CD-ROM includes all print components that support the *Teacher Edition* and *Student Edition* in PDF files,

viewable with *Adobe Acrobat Reader 4.0* or later.

- It is possible to quickly locate documents that are correlated to the *Teacher Wraparound Edition* by selecting the on-screen references to those documents.
- The *Teacher Edition* pages contain interactive "hot links" to other page references within the *Teacher Edition*, including print and online resources connected to the physics content currently on display.
- The CD-ROM includes a searchable database of resource-aligned, printable, full-colour transparencies and monotone blackline masters.
- All material can be fully edited by the user and imported into typical word processing software such as *Microsoft Word* and *ClarisWorks*.
- Other features of the CD-ROM include searchable documents for laboratory activities, graphing calculators in the classroom, assessment and evaluation suggestions, alternative assessments in physics, enrichment, cooperative learning, review and reinforcement of concepts, and problem-solving sets.
- All solutions (in full) to the problems in the *Student Edition* are included in a single file that can be searched by chapter, page number, and problem number.

Suggested Use: Senior 3; Senior 4; Teacher Reference
Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems Laboratory Manual Student Edition (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR), 2002. 235 p. ISBN 0-02-825483-X.

This manual includes 53 laboratory experiments, investigations, and activities. It includes calculator-based labs (CBLs), a teacher's guide, and answer pages. It is a comprehensive resource that includes a laboratory materials list, a section on safety and first aid in the laboratory, and reference tables.

Suggested Use: Senior 3; Senior 4; Student - Breadth and Depth
Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems Study Guide Student Edition (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR), 2002. 186 p. ISBN 0-02-825493-7.

This resource is divided into 31 sections and is composed of primarily fill-in-the-blank, short-answer, and basic recall questions to assist students in their preparation for tests. This resource offers little in terms of conceptualization.

Suggested Use: Senior 3; Senior 4; Student - Breadth and Depth
Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems Teacher Classroom Resources (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR), 2002. unp. ISBN 0-07-826377-8.

This resource comes in print form, as a kit that includes different books, tests, study guides, and colour overhead transparencies.

The *Teacher Classroom Resources* package is very extensive, accessible, and easy to use. It includes worksheets, a study guide, pocket labs and experiments, plus a test on each chapter. It also includes booklets on graphing calculators, assessment approaches, and science safety skills.

Suggested Use: Senior 3; Senior 4; Teacher Reference
Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems Teacher Wraparound Edition (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR), 2002. 893 p. ISBN 0-07-825934-7.

The *Physics: Principles and Problems Teachers' Wraparound Edition* includes ideas for teaching, answers to questions, demonstrations, and suggestions for journal writing, all of which are conveniently wrapped around the student text pages.

Suggested Use: Senior 3; Senior 4; Teacher Reference

Date Recommended: 2003-Feb-17

Glencoe Physics: Principles and Problems Transparency Package (Print-Integrated Resource). Brown, Eric. (Glencoe Physics: Principles and Problems). McGraw-Hill Ryerson Limited (MHR), 2002. ISBN 0-02-825489-9.

The *Physics: Principles and Problems Transparency Package* contains 57 colour transparencies, as well as a master resource book.

Suggested Use: Senior 3; Senior 4; Teacher Reference

Date Recommended: 2003-Feb-17

McGraw-Hill Ryerson Physics (Grade 11 and 12 combined) - Nova Scotia Edition. Nova Scotia Edition (Print-Integrated Resource). (McGraw-Hill Ryerson Physics). McGraw-Hill Ryerson Limited (MHR).

This series consists of a student text with e-book and teacher resource CD-ROM. It is congruent with the Manitoba Specific Learning Outcomes for most of the Senior 3/Senior 4 Manitoba Physics curriculum. As this is a Canadian resource, a number of the problems are contextualized around a Canadian theme. It is also consistent with the scope, sequence, and focus of the *Common Framework of Science Learning Outcomes K to 12* (otherwise known as the Pan-Canadian Science Framework). The mathematical treatment is at an appropriate level for Senior 3 and Senior 4.

Date Recommended: 2003-Jun-03

McGraw-Hill Ryerson Physics (Grade 11 and 12 combined) - Nova Scotia Edition (includes

a Student E-Book CD-ROM). Nova Scotia Edition (Print-Integrated Resource). (McGraw-Hill Ryerson Physics). McGraw-Hill Ryerson Limited (MHR), 2003. 993 p. ISBN 0-07-092280-2.

The textbook is divided into eight units: Kinematics; Dynamics; Momentum and Energy; Waves; Force, Motion, Work, and Energy; Electrical, Gravitational, and Magnetic Fields; Waves and Modern Physics; and Nuclear Physics. The textbook also includes a special skill section (including error analysis, significant digits, graph analysis, mathematical modelling, and a math toolbox), various appendices, answers to practice problems and chapter and unit review problems, glossary, and index.

The introduction of physics concepts is based on students' prior experiences and are subsequently addressed with both conceptual and mathematical approaches. A lot of hands-on activities are suggested to enhance the students' learning. Concepts are represented in multiple modes: pictorial, verbal, symbolic, and graphical. Many problems engage critical thinking skills. The text also incorporates various sports connections which help the students to see applications of physics in the everyday world.

Comment: The use of the word "conceptual" in reference to mathematical problem solving is not congruent with how it is used in the Manitoba curriculum.

The text includes a significant amount of Canadian content, and it also encourages students to consider careers in physics-related fields. It provides interdisciplinary links to other subjects, including biology, chemistry, earth and space science, and technology. The history of science is incorporated in the text margins with short, informative, history links. The text makes good use of lay-out and colour to clearly present the main ideas and concepts.

The text includes an e-book for portability and suggested unit projects. These unit projects offer extensive possibilities for students to show their creativity and conceptual understanding of physics, and develop their communication skills and research skills in physics. The student is required to apply physics concepts to everyday life through these projects.

The book and software conveniently incorporate lab activities and Probeware lab web links, which provide research possibilities for the student.

Comment: This resource supports most of the Specific Learning Outcomes (SLOs) in the Manitoba Senior 3 and Senior 4 physics curriculum. Teachers will, however, require additional resources to support the Senior 3 SLOs in Waves, Fields, and the historical context of the Nature of Light, and the Senior 4 SLOs in Fields and Electric Circuits.

Suggested Use: Senior 3; Senior 4; Student - Breadth and Depth

Date Recommended: 2003-Jun-02

McGraw-Hill Ryerson Physics (Grade 11 and 12 combined) - Nova Scotia Edition Teacher's Resource CD-ROM. Nova Scotia Edition (Print-Integrated Resource). (McGraw-Hill Ryerson Physics). McGraw-Hill Ryerson Limited (MHR), 2003. unp. ISBN 0-07-092279-9.

The electronic *Teacher's Resource CD-ROM* features extensive support material, such as planning charts, physics background information, teaching strategies, blackline masters for each chapter, assessment rubrics, and chapter-by-chapter answers to questions. It also contains a modifiable lab and problems manual and an extensive solutions manual for all problems.

This resource differs from traditional resources/texts in that it treats electrical, gravitational, and magnetic fields as one unit.

Suggested Use: Senior 3; Senior 4; Teacher Reference

Date Recommended: 2003-Jun-02

Physics: Concepts and Connections (Combined Edition). Newfoundland Edition (Print-Integrated Resource). van Bemmelen, Henri M. (Physics: Concepts and Connections). Irwin Publishing Ltd. (NEL).

This series is congruent with the Manitoba Specific Learning Outcomes for all of the topics in

the Senior 3/Senior 4 Manitoba physics curriculum, except for the historical context of the Senior 3 Nature of Light topic. The mathematical treatment is at an appropriate level for Senior 3 and Senior 4. As this is a Canadian resource, a number of the problems are contextualized around a Canadian theme. It is also consistent with the scope, sequence, and focus of the *Common Framework of Science Learning Outcomes K to 12* (otherwise known as the *Pan-Canadian Science Framework*). For instance, the Science-Technology-Society-Environment (STSE) foundation is well addressed by end-of-chapter activities designed to appeal to students' interests.

Date Recommended: 2003-Jun-02

Physics: Concepts and Connections Combined Edition (Student Book). Newfoundland Edition (Print-Integrated Resource). van Bemmelen, Henri M. (Physics: Concepts and Connections). Irwin Publishing Ltd. (NEL), 2001. 831 p. ISBN 0-7725-2955-8.

The textbook is divided into six sections: Kinematics; Dynamics; Work, Energy, and Power; Waves, Light, and Sound; Electric, Magnetic, and Gravitational Fields; and Matter – Energy Interface. The textbook also includes a glossary, an index, and useful and extensive appendices on safety, writing lab reports, measurement uncertainty, proportioning techniques, regression, and mathematical techniques.

The book is well organized and user friendly, with clear and effective text, diagrams, and photos throughout (e.g., the graphs and graphics in the linear motion section and the free-body diagrams in dynamics). Problem-solving techniques are clearly and extensively treated through illustrations, concept maps, and full sample solutions. Final answers to problems are available to students in the appendices. Activities and laboratories are included at the end of chapters.

Comments: Teachers will need to consult the *Manitoba Physics Foundation for Implementation* documents to fully support the following content areas:

- early theories of light (Newton's corpuscular model versus the wave model) and predictions of these models (Senior 3 – Nature of Light)
- two-dimensional waves, in-depth treatment of wavefronts with respect to the law of refraction and Snell's Law (Senior 3 – Waves)
- terminal voltage and the internal resistance of electrochemical cells (Senior 4 – Electric Circuits)
- production of electromagnetic waves (Senior 4 – Fields)

Suggested Use: Senior 3; Senior 4; Student - Breadth and Depth
Date Recommended: 2003-Jun-02

Physics: Concepts and Connections Combined Edition. Overhead Transparencies. Newfoundland Edition (Print-Integrated Resource). van Bemmelen, Henri M. (Physics: Concepts and Connections). Irwin Publishing Ltd. (NEL), 2003. ISBN 0-17-626093-5.

The overhead transparencies package includes diagrams, graphs, and solutions from the textbook.

Suggested Use: Senior 3; Senior 4; Teacher Reference
Date Recommended: 2003-Jun-02

Physics: Concepts and Connections Combined Edition. Teacher's Resource Guide (with CD-ROM). Newfoundland Edition (Print-Integrated Resource). van Bemmelen, Henri M. (Physics: Concepts and Connections). Irwin Publishing Ltd. (NEL), 2003. 609 p. ISBN 0-7725-2596-6.

This resource is clearly presented in a tabbed, three-ring binder and includes detailed lesson plans that tightly integrate the components of the *Concepts and Connections* series (textbook, overhead transparencies, blackline masters, and labs) for each day of a typical semester. It also includes limited lab activities and demonstrations, assessment tools and strategies to ensure that learning outcomes will be met, a materials list,

case studies, and blackline masters. It does not include test questions or test banks. The *Teacher's Resource Guide* for this series is a particularly important resource because it includes a CD-ROM that contains PDF files of the solutions to the "Conceptual Questions" and "Problems" at the end of each chapter.

Comment: No hard copy of the 215-page solutions manual is provided, but it is easy to navigate through the PDF files.

System Requirements

CD-ROM requires standard Windows/Macintosh computer with 486 MHz or better processor, CD-ROM drive, and *Adobe Acrobat Reader*.

Suggested Use: Senior 3; Senior 4; Teacher Reference
Date Recommended: 2003-Jun-02

Alphabetical Title Listing of Suggested Uses by Audience

Senior 3

Conceptual Physics: The High School Physics Program (Student Book)
 Conceptual Physics: The High School Physics Program Core Resources (Kit)
 Conceptual Physics: The High School Physics Program Laboratory Manual
 Conceptual Physics: The High School Physics Program Overhead Transparencies with Teaching Guide
 Conceptual Physics: The High School Physics Program Teacher's Edition
 Conceptual Physics: The High School Physics Program Test Bank with TestWorks CD-ROM
 Glencoe Physics: Principles and Problems (Student Book)
 Glencoe Physics: Principles and Problems Computer Test Bank (Windows and Macintosh)
 Glencoe Physics: Principles and Problems Interactive Teacher Edition (CD-ROM)
 Glencoe Physics: Principles and Problems Laboratory Manual Student Edition
 Glencoe Physics: Principles and Problems Study Guide Student Edition
 Glencoe Physics: Principles and Problems Teacher Classroom Resources
 Glencoe Physics: Principles and Problems Teacher Wraparound Edition
 Glencoe Physics: Principles and Problems Transparency Package
 McGraw-Hill Ryerson Physics (Grade 11 and 12 combined) - Nova Scotia Edition (includes a Student E-Book CD-ROM)
 McGraw-Hill Ryerson Physics (Grade 11 and 12 combined) - Nova Scotia Edition Teacher's Resource CD-ROM
 Physics: Concepts and Connections Combined Edition (Student Book)
 Physics: Concepts and Connections Combined Edition. Overhead Transparencies
 Physics: Concepts and Connections Combined Edition. Teacher's Resource Guide (with CD-ROM)

Senior 4

Glencoe Physics: Principles and Problems (Student Book)
 Glencoe Physics: Principles and Problems Computer Test Bank (Windows and Macintosh)
 Glencoe Physics: Principles and Problems Interactive Teacher Edition (CD-ROM)
 Glencoe Physics: Principles and Problems Laboratory Manual Student Edition
 Glencoe Physics: Principles and Problems Study Guide Student Edition
 Glencoe Physics: Principles and Problems Teacher Classroom Resources
 Glencoe Physics: Principles and Problems Teacher Wraparound Edition
 Glencoe Physics: Principles and Problems Transparency Package
 McGraw-Hill Ryerson Physics (Grade 11 and 12 combined) - Nova Scotia Edition (includes a Student E-Book CD-ROM)
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